AMENDMENTS TO THE CLAIMS

1. (Previously presented) A method for quantifying a weight percent methane of a fluid downhole, comprising:
obtaining the fluid downhole;
measuring a first optical density for the fluid at a first wavelength region associated with a methane peak;
measuring a second optical density for the fluid at a second wavelength region associated with the methane peak; and
determining weight percent methane for the fluid sample from the first and second measured optical densities.

2. (Original) The method of claim 1, wherein the first wavelength region has a center wavelength of 1670 nanometers; and the second wavelength has a center wavelength of 1682 nanometers.

3. (Original) The method of claim 1, further comprising:
correlating weight percent methane with optical absorbance at the first and second wavelengths.

4. (Original) The method of claim 3, further comprising:
correlating pressure.

5. (Original) The method of claim 3, further comprising:

PAGE 4/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26

correlating temperature.

6. (Original) The method of claim 1 further comprising:
determining a gas oil ratio for the sample based on the weight percent methane.

7. (Original) The method of claim 1, further comprising:
monitoring sample cleanup based on a change in weight percent methane.

8. (Original) The method of claim 3, further comprising:
correlating based on synthetic mixtures of methane and dead crude oils.

9. (Original) The method of claim 1, further comprising:
filtering an optical density measurement with a 11 nm full width half maximum filter.

10. (Original) The method of claim 1, wherein the first wavelength region has a center wavelength of 1670 nanometers and the second wavelength has a center wavelength of 1682 nanometers;
correlating weight percent methane, pressure and temperature with optical absorbance at the first and second wavelength regions; and
determining a gas oil ratio based on the weight percent methane.

PAGE 5/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26

11. (Previously presented) An apparatus for quantifying the weight percent of methane in a wellbore environment, comprising:

a tool for obtaining a fluid downhole;

a spectrometer for measuring a first optical density for the fluid at a first wavelength region associated with a methane peak and measuring a second optical density for the fluid at a second wavelength region associated with the methane peak; and

a processor function for determining weight percent methane for the fluid sample from the first and second measured optical densities.

12. (Original) The apparatus of claim 11, wherein the first wavelength region has a center wavelength of 1670 nanometers; and the second wavelength has a center wavelength of 1682 nanometers.

13. (Original) The apparatus of claim 11, further comprising:

a processor function for correlating weight percent methane with optical absorbance at the first and second wavelengths.

14. (Original) The apparatus of claim 13, the processor function further comprising a function for correlating pressure.

15. (Original) The method of claim 3, the processor function further comprising a function for correlating temperature.

PAGE 6/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26

16. (Original) The apparatus of claim 11 further comprising:
a processor function for determining a gas oil ratio for the sample based on the weight percent methane.

17. (Original) The apparatus of claim 11, further comprising:
a processor function for monitoring sample cleanup based on a change in weight percent methane.

18. (Original) The apparatus of claim 13, the processor function further comprising a function for correlating based on synthetic mixtures of methane and dead crude oils.

19. (Original) The method of claim 11, further comprising:
a filter for filtering an optical density measurement with a 11 nm full width half maximum filter.

20. (Original) The apparatus of claim 11, wherein the first wavelength region has a center wavelength of 1670 nanometers and the second wavelength has a center wavelength of 1682 nanometers, the processor function further comprising a function for correlating weight percent methane, pressure and temperature with optical absorbance at the first and second wavelength regions and a function for determining a gas oil ratio based on the weight percent methane.

PAGE 7/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26

21. (Previously presented) A computer readable medium in a computer containing executable instructions that when executed by a computer perform a method for quantifying the weight percent of methane in a wellbore environment, comprising:
obtaining a fluid downhole;
measuring a first optical density for the fluid at a first wavelength region associated with a methane peak;
measuring a second optical density for the fluid at a second wavelength region associated with the methane peak; and
determining weight percent methane for the fluid sample from the first and second measured optical densities.

22. (Original) The medium of claim 21, wherein the first wavelength region has a center wavelength of 1670 nanometers; and the second wavelength has a center wavelength of 1682 nanometers.

23. (Original) The medium of claim 21, further comprising:
correlating weight percent methane with optical absorbance at the first and second wavelengths.

24. (Original) The medium of claim 23, further comprising:
correlating pressure.

PAGE 8/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26

25. (Original) The medium of claim 23, further comprising:
correlating temperature.

26. (Original) The medium of claim 21 further comprising:
determining a gas oil ratio for the sample based on the weight percent methane.

27. (Original) The medium of claim 21, further comprising:
monitoring sample cleanup based on a change in weight percent methane.

28. (Original) The medium of claim 23, further comprising:
correlating based on synthetic mixtures of methane and dead crude oils.

29. (Original) The medium of claim 21, further comprising:
filtering an optical density measurement with a 11 nm full width half maximum filter.

30. (Original) The medium of claim 21, wherein the first wavelength region has a center wavelength of 1670 nanometers and the second wavelength has a center wavelength of 1682 nanometers; correlating weight percent methane, pressure and temperature with optical absorbance at the first and second wavelength regions; and determining a gas oil ratio based on the

PAGE 9/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26

weight percent methane.

PAGE 10/14 * RCVD AT 7/24/2006 6:20:49 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/10 * DNIS:2738300 * CSID:7132668510 * DURATION (mm-ss):03-26